ISSUE FEATURES

SAR SCENE

The Canadian Search and Rescue Magazine Online

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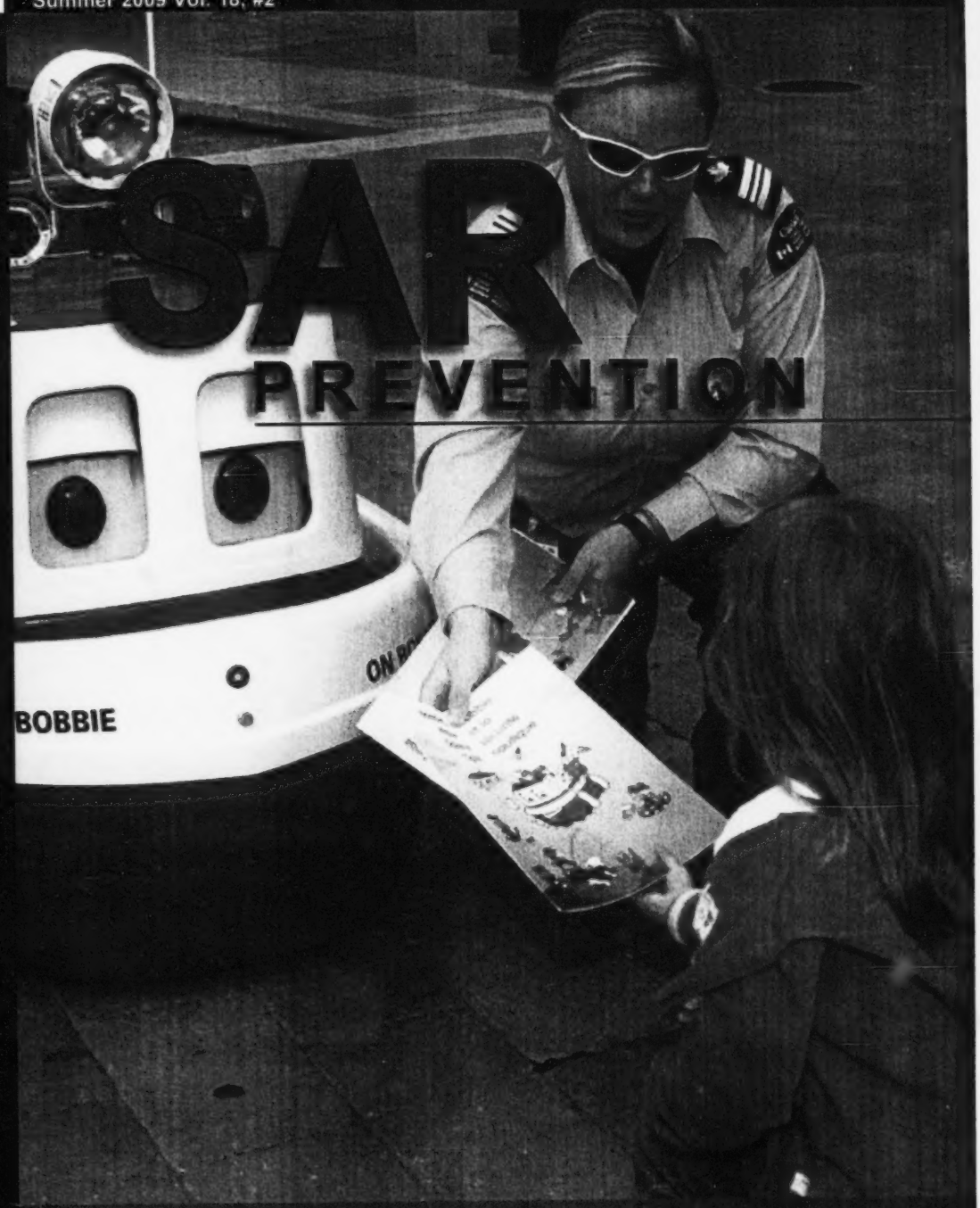
SWITCH TO – 406 – Making an informed choice

NASAR Conference and the SAR*SCENE* revitalization project

Win-win scenarios

Training exercise becomes a way to test regional SAR capabilities

Modernizing the Canadian Coast Guard Auxiliary



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Cover photo courtesy of François Vézina
The cover picture features a 2004-2006 CCGA SAR NIF-funded project – *Bobbie the Safety Boat Program.*

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103 Squadron does triple duty

By Captain Paul Hamlyn - 9 Wing Gander
Department of National Defence

May 28, 2009, started like any other day for members of 103 Search and Rescue (SAR) Squadron, located at 9 Wing Gander, N.L., but it didn't stay that way. Early in the morning, the SAR stand-by crew was alerted by the Joint Rescue Coordination Centre (JRCC) in Halifax, N.S., about a marine medical emergency. A 67 year-old male was suffering from a suspected heart attack on the fishing vessel Tiffany Emily Eve. Within minutes, the Cormorant helicopter and its crew were airborne and en route to the last known location of the vessel, approximately 85 nautical miles north of St. John's, N.L. Once on scene, the search and rescue technicians were lowered onto the vessel and stabilized the patient for airlift to the Health Sciences Centre in St. John's.

Upon landing in St. John's, the crew was alerted to another medical emergency – a crewmember onboard the tanker Catherine Knutsen suffering from a suspected stroke. The Knutsen was located 175 nautical miles east of St. John's and 50 nautical miles south of the oil platform Hibernia. After re-fuelling, the Cormorant crew airlifted the 56-year old male from the tanker and transported him to the Health Sciences Centre in St. John's.

As the second mission was unfolding, JRCC Halifax informed 103 Squadron operations of a third medical evacuation required on the Great Northern Peninsula of Newfoundland, approximately 40 nautical miles south-west of the town of Port-Aux-Choix. A 51 year-old crewmember onboard the fishing vessel Lady Terri had reportedly fallen overboard and had sustained head and leg injuries, and appeared to be suffering from severe hypothermia. This required a second crew and aircraft to be stood up; they were airborne and en route to the Lady Terri within 20 minutes.

"Once on scene, due to large opposing obstacles combined with the small vessel size, we had to blend CF SAR response capabilities with those of the Canadian Coast Guard as the initial hoist insertion was conducted to the CCGV [Canadian Coast Guard vessel] Cape Norman, followed by a risky ship-to-ship ST [search and rescue technician] team transfer," said Major Stephen Reid, aircraft commander.

"I went down first and somehow ended up entangling in the bow rails, hanging upside down by my knees and backwards on the outside of the bow. Fortunately I was able to disconnect from the cable and crawl back under the railing to a safer position," said Warrant Officer Dale Robillard, SAR tech.

"Starting an IV in a non-hospital environment is tough under any circumstance and in this case it was virtually impossible," he said. To insert the IV, SAR tech Sgt Dan Villeneuve got WO Robillard to lie down on the deck and hold the patient's arm. Sgt Villeneuve then "laid down on his back, sideways to the patient's head so that he could try to insert the needle...He actually got it!", said WO Robillard.

Left with no other choice but to extract from the aft deck amidst these obstacles due to the immobility of the patient in the stretcher, the patient was hoisted onto the Cormorant by flight engineer, Warrant Officer Robin using the hover trim control (HTC). This was

the first operational use of the HTC on a Cormorant to execute an extraction from a vessel. HTC allows the flight engineer limited control to maneuver the helicopter in a hover via a "joy-stick" located next to the cargo door.

On board the Cormorant, a stabilized and secured patient was airlifted to the Western Memorial Hospital in Corner Brook, N.L. ■

Canadian animal heroes honoured for life-saving deeds

This article was amended by the editor for content.

TORONTO - Fiercely determined, courageous and tenacious. These are a few of the characteristics describing Ace the search and rescue dog, one of four animals inducted into the 41st annual Purina Animal Hall of Fame in Toronto on May 4th. Honoured in a formal ceremony, these animal heroes demonstrate how the unique bond between animals and people can ultimately save a human life.

Service Animal of the Year:
Ace (Hamilton, ON)

Ray Lau, a Hamilton Police Search and Rescue team volunteer, was pleased to adopt Ace, an energetic and rambunctious Dutch-Shepherd mix. In late December, after extensive SAR dog training, Ace went to work for the very first time searching for a woman who had been missing for three full days outside, following a massive and lengthy snowstorm in Ancaster, Ontario. Ray and Ace were three hours into their search when Ace suddenly bolted away, giving indication that he detected a human scent. Ace ran through the deep snow at full speed for roughly 75 metres. Then, he stopped suddenly, lowered his head, and started barking repeatedly into the snow. Looking down, Ray saw a face peeking out from the snow - the missing woman had been found and to everyone's amazement, was still alive and conscious. Had Ace not found her when he did, the outcome would have been very different. Ace demonstrated his true purpose that day: to save others just as Ray had saved him. ■

French officials recognize SAR crew effort

By Captain Paul Hamlyn – 9 Wing Gander
Department of National Defence

Members of the 103 Search and Rescue Squadron and other agencies – who were involved in a 2008 search and rescue operation of a French vessel – received medals from French officials in recognition of their efforts during a ceremony at the Canadian Coast Guard Station in St. John's, N.L., on April 24, 2009.

In his remarks, Jean-Pierre Berçot, prefect of the French island of Saint-Pierre et Miquelon, emphasized the importance of the relationship that exists between France and Canada, and the special working relationship with the Canadian Coast Guard and the Canadian military that was highlighted during the Cap Blanc mission.

In the early hours of December 2, 2008, 103 Squadron was informed of an overdue vessel, the Cap Blanc, from Saint-Pierre et Miquelon. The Cap Blanc had departed Argentia, N.L., located on the southwest coast of the Avalon Peninsula, late in the evening of December 1, and was now reported overdue by French authorities.

Within minutes, a Cormorant helicopter and its crew were on their way to the last known position of the Cap Blanc. Upon arriving at the scene, the crew saw a red hull of what appeared to be the front of the Cap Blanc protruding out of the water. The Cap Blanc had capsized. The Canadian Coast Guard Cutter W. Jackman and the RCMP police vessel Murray were at the scene as well. A second Cormorant was launched; the plan was for the SAR techs to dive to the overturned vessel and search for the four crew members who may have still been inside. As the SAR techs were preparing for the dive, the Cap Blanc suddenly slipped into the ocean and sank.

The search for the missing crewmembers went on for three days. Crews from 103 Squadron and 413 Transport and Rescue Squadron in Greenwood, N.S., along with members of the Canadian Coast Guard and the RCMP, searched the Placentia Bay area with hope of finding the Cap Blanc crewmembers. Unfortunately, the search was officially called off after three days. ■

CSBC Annual Symposium 2009

The Canadian Safe Boating Council is holding its annual symposium at the Hilton Whistler Resort and Spa, in Whistler, British Columbia, September 19-22, 2009. The symposium is a key component of their safe boating program. Participants will be able to attend seminars and presentations, as well as network. For more information on this event, visit www.csbc.ca. ■

ERRATUM: In Volume 18, issue 1, (April 2009 issue), on p.3 of the magazine – article entitled "The challenges of training for SAR volunteers" – the photo credit should have been given to Marc DesRosiers and not Monique Lalonde.

People

Heroes recognized

On June 9, 2009, St. John Ambulance honoured 17 Newfoundlanders and Labradorians, as well as the Crew of the CCGS Leonard J. Cowley, with Life Saving Awards for their acts of bravery at an Investiture Life Saving Awards Ceremony at the Anglican Cathedral in St. John's.

Ian Wheeler was honoured with a Gold Life Saving Award for selfless actions that led to saving a life during the rescue operation for the Cougar Helicopter accident on March 12, 2009. Mr. Wheeler and the crew of two cougar helicopters responded to an emergency call that Cougar Flight 491 had ditched in the North Atlantic. Flight 491 had been ferrying 16 workers to the Hibernia oil platform and SeaRose FPSO off the Grand Banks when the crew reported problems. Arriving at the scene, Mr. Wheeler saw debris from the wreckage, two empty life rafts and one survivor. Without hesitation and without thought for his own safety, Mr. Wheeler was lowered down on a hoist cable into the rough water. Securing the survivor to a lifeline, Mr. Wheeler sent the man up in his own rescue sling while he stayed, untethered, in two to three meter waves, waiting to be picked up. Once back on board, Mr. Wheeler immobilized the casualty, administered oxygen and continued to provide emergency first aid for hypothermia. Mr. Ian Wheeler, Commander in The Order of St. John, is to be commended for his courageous actions, team work and for his knowledge and use of first aid in saving the life of a casualty from Cougar Flight 491.

In addition to Mr. Wheeler, **Steve LeMessurier was also recognized with a Gold Life Saving Award** for his use of first aid in saving and attempting to save the lives of casualties from Cougar Flight 491.

The crew of the CCGS Leonard J. Cowley was recognized for its courageous and prompt actions in saving the lives of crewmembers from the F/V Monte Galineiro and **was presented with a Gold Life Saving Award.** On February 22, 2009, while patrolling the grand banks of Newfoundland, the crew of the CCGS Leonard J. Cowley was alerted by a distress call from a nearby fishing vessel. The Cowley immediately proceeded to their aid. The entire crew of the F/V Monte Galineiro was forced to abandon ship when an explosion occurred in the engine room. Fire broke out and the vessel rapidly took on water. Some

Awards

SARSCENE Conference receives award

By David Day, SARVAC

On June 11, 2009, the City of St. John's honored the SARSCENE Conference and Expo organizing committee with the city's Admiral Award. The award recognizes conference planning committees that act as true ambassadors for the City of St. John's. Accepting on behalf of the organizing committee were Paul Cook, NL Search & Rescue Association and Cst. Hubert Hall, Royal Newfoundland Constabulary.

The SARSCENE Conference has grown from a small workshop into a national conference that is gaining international appeal. It is the country's largest national Search and Rescue (SAR) conference and expo where Canadian and international SAR professionals (air, ground, marine) gather to learn about new equipment and emerging technologies, share best practices, exchange ideas and tackle issues facing SAR.

In 2008, SARSCENE was held in St. John's Newfoundland. The National Search and Rescue Secretariat, along with the Newfoundland and Labrador Search and Rescue Association and the Newfoundland and Labrador Department of Justice, worked hard as co-hosts to develop an engaging and interactive program under the theme of Strengthening Partnerships.

Paul Cook, Mayor Dennis O'Keefe and Cst. Hubert Hall.

***Photo credit:** City of St. John's*

SARSCENE 2008 is now behind us and it is an understatement to say that it was a resounding success. The Newfoundland weather was beautiful, the food was plenty full, the venues superb, and most importantly, the assistance of volunteers was outstanding. Needless to say, everyone departed the fair city with a smile on their face and fond memories of their visit to the City of St. John's.

The organizing committee would like to extend a special thank you to Stephane Bachand, National Search and Rescue Secretariat, and Ian Garland, Jodie Marc Lalonde and their team from Wilson Young Events, for being an important part of the conference's success. ■

David Day is the Business Manager for the Search and Rescue Volunteer Association of Canada (SARVAC). The organization represents the 13 provincial and territorial associations and over 10,000 volunteers throughout Canada. David volunteers in his home province of Newfoundland and Labrador with Rovers Search and Rescue. To find out more on SARVAC please visit www.sarvac.ca.

People *(continued)*

crewmembers were able to don survival suits before entering the water, but some could not. As sea temperatures in the North Atlantic are extremely cold, the danger of all succumbing to hypothermia and drowning, if not rescued quickly, was real. The Cowley dispatched two rescue boats and successfully retrieved 22 people from the sea. On board, all casualties were treated for hypothermia and advanced first aid was provided to those more seriously injured. The members of the crew of the CCGS Leonard J. Cowley are to be commended for their rapid response, team work and for their knowledge and use of first aid in saving lives.

Ian Pearcey teamed with Marlene Coffey, Stephen Harrie and Corey Ronayne who, on September 27, 2007, on Bay of Islands, off the West Coast of Newfoundland, used their first aid skills to save lives, **were presented with a Silver Life Saving Award**. During a mock training exercise designed to evacuate passengers from a ferry after an onboard explosion, volunteer members from the CCGS Sir Wilfred Grenfell realized that several of the other volunteer participants were actually becoming seriously ill. Exhaust fumes were seeping into the covered lifeboat that was being used in the exercise to evacuate them. Without thought for their own safety, these four individuals worked together to provide emergency first aid for asphyxiation by administering oxygen to 21 casualties. They arranged for those severely affected to be air-lifted by rescue helicopter and continued to provide ongoing care to the rest of the casualties until they could all be evacuated by high speed craft to shore for treatment. Mr. Pearcey, Miss Coffey, Mr. Harrie and Mr. Ronayne are to be commended for their selfless actions, and for their knowledge and use of first aid in saving lives. ■

Win-Win scenarios When SAR Techs train with future outdoor leaders, the learning goes both ways

By Tim Shuff

Two ill-prepared hikers are caught out overnight without enough food or clothing, running low on energy and facing hypothermia. When they are late coming home, friends call search and rescue (SAR). A C-130 Hercules aircraft comes in for a low pass, locates the party on the ground and drops a radio. The hikers are able to communicate their needs and get an air drop of much needed equipment and food—enough to warm up and get back to safety.

This could be a real life-saving wilderness survival situation, but last April it was a mock scenario that one lucky group of outdoor leadership students got to practice–teaching them the importance of emergency preparedness, and also the availability of rescue resources for when those preparations aren't enough.

The Recreation Management program at Acadia University, in Wolfville, Nova Scotia, has developed a special training relationship with 413 Search and Rescue Squadron in nearby CFB Greenwood. According to Acadia professor Scott Hennigar, the collaboration is unique in North America.

Field camp

Every spring, students in professor Hennigar's Outdoor Leadership and Expedition Management course attend an intensive 10-day field camp in the Black River Lake area near Gaspereau, Nova Scotia. For the past several years, four of 413 Squadron's SAR technicians (Techs) have joined the camp for four days, filling a dual role as both teachers and trainees.

Samantha Reyno holding the flare.

Photo credit: *Scott Hennigar*

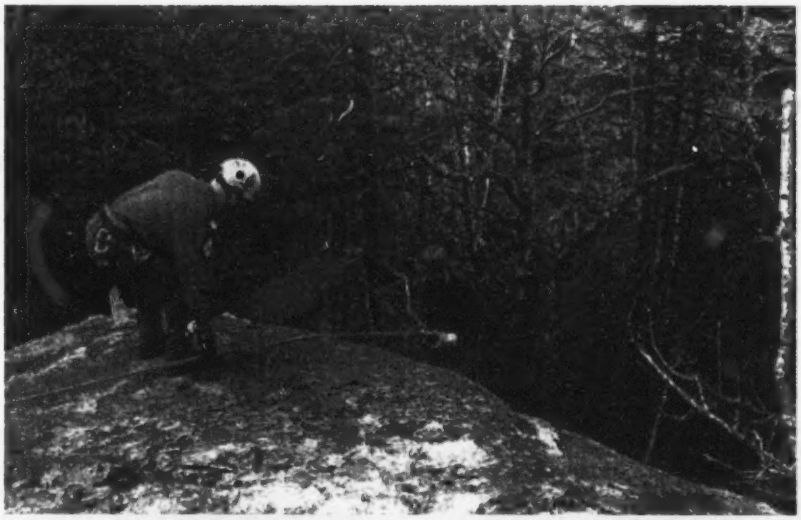
In addition to the C-130 Hercules air drop scenario, students on last April's field camp got a surprise cell phone call from the Joint Rescue Coordination Centre (JRCC) in Halifax. "The scenario was that there was bad weather in Greenwood and that the helicopter was having trouble getting out due to low ceilings," said Sergeant Norman Penny of the 413 Squadron, who led the training exercise this year.

With coordinates from the JRCC, the students had to locate an injured hiker who had fallen off a cliff, administer first aid, and direct 413 Squadron's helicopter to the scene. "The standby crew back in Greenwood was out flying, so I had arranged with them to fly near the area," said Penny. Two SAR Techs lowered to the ground to complete the rescue with the help of the students.

A lasting partnership

The training partnership between Acadia and the 413 Squadron started 10 years ago when professor Hennigar invited a SAR Tech to come and speak to his class. "I wanted the students to get a better sense of how much effort it takes to be rescued compared to the effort it takes to do risk management. I also wanted them to understand that if they do get into a catastrophic situation, there are resources available."

The SAR Techs quickly saw the potential for the field camp to mesh with their own training. "The training is amazing," says Penny. The SAR Techs learn from seeing what kind of skills the outdoor leaders have, and what type of equipment they carry. They can also pass on skills like emergency signaling, shelter building, high-angle rescue and first aid that will make the young outdoor leaders more self-sufficient in the backcountry and more helpful to their rescuers in an emergency.



Sgt. Norm Penny and student Scott Lewin working together during training.

***Photo credit:** Scott Hennigar*

SAR Tech skills

Penny also values the chance to show off everything SAR Techs are trained to do. "A lot of people just think that we jump out of planes, but they know now that SAR Techs have mountain skills. A lot of people think we're the Coast Guard," he said. One student didn't know SAR Techs existed. "He thought all we're doing is fighting a war. I think we changed his outlook on the military."

Adrian Graves was a student in last year's course and returned this year as a teaching assistant. "From my own experience, if there was an incident, I wouldn't have even considered calling search and rescue," said Graves. "Now I know that they're there and what they're capable of." For Graves, the highlight of this year's training was a night exercise with the Cormorant. SAR Techs rappelled out of the helicopter and then let students try on night vision goggles. "It's neat to know that even if you don't have a fire going, even if it's just a lighter, there's a really good chance that you're going to get seen," said Graves.

Over 100 students have been through professor Hennigar's field camp in the past 10 years. At least one has gone on to use his SAR training in a real emergency. The student went on to work with the Alberta government. Hennigar said, "They were working on the eastern slopes of the Rockies with mountain pine beetle infestation crews and they'd put about 45 people in the field. A big storm came in and caught everyone off guard. Temperatures dropped down to minus 15 and it dropped about four feet of snow. In the meetings about how to take action, Jeff was the only one who understood what the Canadian Armed Forces could bring to bear. He was pretty much directly responsible for bringing the rescue squadrons into the event. Subsequently they got everyone out."

Sergeant Penny is glad to get the message out that help is available, because too many people wait until it's too late to call. Plus, with the skills these students learn, they'll probably never have to. "I know there are safer trips out there now," said Penny. "We don't get a lot of calls from missing groups in this neck of the woods." ■

Tim Shuff is a freelance writer and editor based in Toronto. He is an outdoor recreation graduate, former wilderness guide and the editor of Adventure Kayak magazine.

NASAR Conference and the SARSCENE revitalization project

By Manon Langlois, NSS

As part of the SAR*SCENE* conference renewal, the National Search and Rescue Secretariat (NSS) is looking at other events related to search and rescue (SAR), and finding what can be learned from them. With this in mind, I headed to the National Association for Search and Rescue (NASAR) Conference in Little Rock, AK, from May 28 to 30, 2009.

NASAR is a non-profit association of paid and volunteer SAR professionals in the USA. The organization is "dedicated to advancing professional, literary, and scientific knowledge in fields related to search and rescue."

The conference was preceded by a two-day meeting of federal and state SAR coordinators. Discussions centered on inter-operability, the support of the U.S. National SAR Program, and the exchange of ideas and information on how to best ensure the seamlessness of SAR delivery in the USA. Of particular interest during these meetings was the presentation of the National SAR Committee's work in understanding and developing maritime, aeronautical and land-based georeferencing standard requirements. I was interested to learn that the U.S. Air Force operates a national SAR school. When a SAR community requests it, the Air Force SAR school comes to them free of charge and trains volunteers based on nationally recognized NASAR training standards.

The conference offered a number of training streams (Swiftwater, Technical, SAR Dog, SAR Management, etc.), providing the close to 300 participants with the opportunity to cross train from one stream to another. This streaming is particularly interesting for us at the NSS, as it is one of the ideas that we are reviewing during the revitalization of the SAR*SCENE* Conference. Some of the workshops at NASAR also provided official recognition of training to participants working towards professional certification.

This was my first attendance at the NASAR Conference, and I was impressed with the programming, content, and organization.

Because of the nature of the American geography and climate, SAR needs and resources are organized somewhat differently from ours. The American civilian search and rescue network is regrouped under the auspices of the federal Department of Homeland Security, and encompasses all things SAR, from law enforcement, to volunteers to public safety. This regrouping allows for harmonized responses to (sometimes catastrophic) events like Katrina. I had ample opportunity to meet, network and exchange ideas with some very dedicated folks, the organizing committee, SAR volunteers, federal and state partners, emergency responders, exhibitors and many others. It was interesting to observe that our southern neighbours share similar concerns and face many of the same SAR issues as we do here in Canada. National training standards are one of their major interests, and the NASAR training standards are widely recognized in the USA.

This was my first attendance at the NASAR Conference, and I was impressed with the programming, content, and organization. I'll be looking at other opportunities as we continue to build the new concept for SAR*SCENE*. If you have any suggestions and ideas to pass along, please e-mail us. ■

Manon Langlois is the Senior Communications Advisor at the National Search and Rescue Secretariat. Among other projects, she is the lead for the SARSCENE Revitalization Project and is responsible for the SARSCENE Steering Committee.

Training exercise becomes a way to test regional SAR capabilities

By Jack Ricou, SAR Global 1

"Geeeez. Come on phone, ring. I've been awake all night waiting. Am I on the callout list? I should be but... Should I call somebody? Who? I'm so nervous. I have no idea where they are going to ask us to go and I'm scared that I won't be able to find the search location. Some searcher I'd make if I can't even find the location of the search. I hope they don't ask me to use a GPS. Some of the others in the class seemed to know so much but I've never used one before and we had so little time to practice."

Riiiiinnng! "Hello?"

"This is Search and Rescue Global 1. We have an incident. Are you able to respond?"

For 21 new volunteer searchers, this is how their day began on Sunday, April 26, 2009, at about 7 a.m. They had been through all the lectures, practiced all the skills, written three exams and passed the field exercises. Now it was time to put it all together and participate with all the other regular members in a blind, mock search exercise, Global SAREX 2, where no one knows until the second they get the call, what or where the scenario will be.

An early start

In a parking lot some 20 km north of the city, on the edge of Gatineau Park, 16 organizers and observers had assembled at 5:30 a.m. They were willing the sun to climb high enough to overcome the morning chill, making calls to the police to set the exercise in motion, inserting the "lost" hikers and eagerly waiting to watch the search unfold.

This exercise is the brainchild of Search and Rescue Global 1 (SG1), a volunteer ground search group based in the Ottawa area. It operates in a vast region straddling the Ontario/Quebec border. SAREX was created to give new searchers their first taste of what a real search is like. SAREX 1, in December 2008, was a huge success in that respect.

However, the exercise is quickly becoming much more. SAREX 2 grew and this time, the province of Quebec's *MRC des Collines* police force agreed to initiate the exercise, just as it might happen in a real situation by calling the SG1 pager number. They also contributed their mobile command vehicle. The National Capital Commission of Ottawa also participated by sending three conservation officers with ATVs. Search and Rescue Pontiac, which operates just west of the Gatineau Park in the province of Quebec, responded with six members. Including the SG1 members, there were 45 active participants for the search.

Staging area and Command for SAREX 2 in Gatineau Park.

***Photo Credit:** Marc DesRosiers*

Observers

Many observers attended the exercise, including the *Association québécoise des bénévoles en*

The search team scans for clues along the interface of two different types of terrain.
Photo Credit: Lawrence Conway

recherche et sauvetage, its sister organization in Ontario, the Ontario Search and Rescue Volunteer Association, the *Sûreté du Québec* provincial police, the *MRC des Collines* municipal police, the *Ministère de la Sécurité publique du Québec* and the master trainer, who qualifies volunteer search instructors for the Ontario Provincial Police. A reporter from a local weekly newspaper also attended and was inserted into one of the search teams.

The Incident Commander for the day was Steve Nason and his challenge was to deploy resources effectively in a huge potential search area, when he had little initial information with which to work. However, as the day progressed, additional clues were discovered and information was gathered, and the search became more focused. The "lost" hikers were finally located at 16:30.

In what ways has the exercise become more than it was originally intended to be? SAREX is a way of demonstrating the skills of volunteer searchers to the various tasking and coordinating agencies. It helps participating groups and agencies to learn from, and about, one another. It builds relationships and contacts that could be vital in a real incident. This kind of exercise is a way to determine how to work together effectively, and it is a safe opportunity in which to make mistakes. All these efforts are deployed in order to be able to mount a large, effective regional search when it will be necessary to do so.

SAREX 3 is planned for Saturday, November 21, 2009. For more information on this exercise, contact Jack Ricou at training@sarglobal1.ca. ■

Jack Ricou retired after more than 30 years working for Parks Canada and enjoys immensely his involvement with Search and Rescue Global 1 in the National Capital Region. He is currently on the Board of Directors and is also SG1's Training Coordinator.

Training exercise becomes a way to test regional SAR capabilities

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Photo Credit: *Marc DesRosiers*

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The search team scans for clues along the interface of two different types of terrain.
Photo Credit: Lawrence Conway

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In what ways has the exercise become more than it was originally intended to be? SAREX is a way of demonstrating the skills of volunteer searchers to the various tasking and coordinating agencies. It helps participating groups and agencies to learn from, and about, one another. It builds relationships and contacts that could be vital in a real incident. This kind of exercise is a way to determine how to work together effectively, and it is a safe opportunity in which to make mistakes. All these efforts are deployed in order to be able to mount a large, effective regional search when it will be necessary to do so.

SAREX 3 is planned for Saturday, November 21, 2009. For more information on this exercise, contact Jack Ricou at training@sarglobal1.ca. ■

Jack Ricou retired after more than 30 years working for Parks Canada and enjoys immensely his involvement with Search and Rescue Global 1 in the National Capital Region. He is currently on the Board of Directors and is also SG1's Training Coordinator.

The Search and Rescue Knowledge Management System

by Graham Newbold, NSS

The National Search and Rescue Secretariat has recently undertaken a significant project to improve and sustain the information and decision support needs of the search and rescue community. The Search and Rescue Knowledge Management System (SAR KMS), which will be designed and implemented over the next three to four years, is intended to take advantage of innovative new software to create a common access for sharing useful SAR data and information. This new platform will not affect the systems already in place for capturing SAR cases and information. Instead it will provide the broader information sharing and reporting functions that current systems do not.

In Phase 2 of the SAR KMS project, which is currently underway, we are interviewing a cross-section of the SAR community and asking them what data and information they need to collect, in order to support respective reporting and decision-making processes. The long-term objective of the project is to design and provide a system that meets the needs of the users. It will be secure and accessible to strategic managers, SAR personnel, and those in the SAR/academic community.

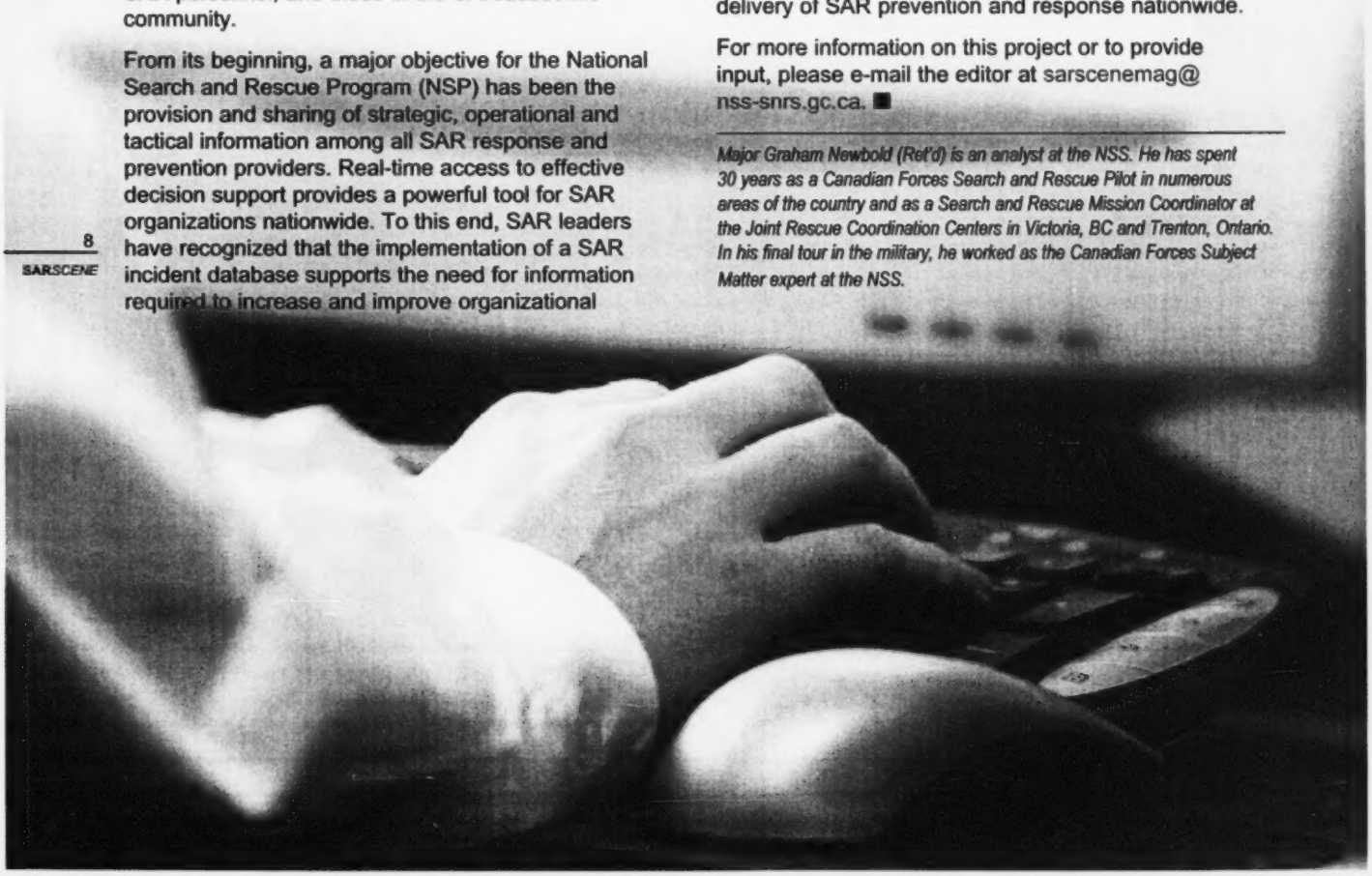
From its beginning, a major objective for the National Search and Rescue Program (NSP) has been the provision and sharing of strategic, operational and tactical information among all SAR response and prevention providers. Real-time access to effective decision support provides a powerful tool for SAR organizations nationwide. To this end, SAR leaders have recognized that the implementation of a SAR incident database supports the need for information required to increase and improve organizational decisions. Through the collaborative transfer of data and information, this system type supports the strategic cornerstones of the NSP, including the development of partnerships, interoperability and innovative technology.

The SAR KMS will be designed to allow for growth and expansion as future information needs are identified. It will be scalable and versatile, providing a wide range of statistical or quantitative analysis and qualitative information, such as text reports and lessons learned. The system is being developed based on input and feedback from the SAR community. Phase 2 is expected to be completed in the fall of 2009. The working prototype (beta) system is expected to be rolled-out in 2010.

SAR community participation in the user-requirements phase and interview process is critical to the development, effectiveness and usefulness of the SAR Knowledge Management System, and the ultimate success of the project. With input from all our partners, the KMS will become a powerful decision-support tool, greatly enhancing collaboration and improving the delivery of SAR prevention and response nationwide.

For more information on this project or to provide input, please e-mail the editor at sarscenemag@nss-snrs.gc.ca. ■

Major Graham Newbold (Ret'd) is an analyst at the NSS. He has spent 30 years as a Canadian Forces Search and Rescue Pilot in numerous areas of the country and as a Search and Rescue Mission Coordinator at the Joint Rescue Coordination Centers in Victoria, BC and Trenton, Ontario. In his final tour in the military, he worked as the Canadian Forces Subject Matter expert at the NSS.



A helicopter of 103 Search and Rescue Squadron is undertaking a helicopter hoisting exercise with a CCGA ship from Nova Scotia.

Photo credit: François Vézina

FEATURED SAR VOLUNTEER ASSOCIATION

Modernizing the Canadian Coast Guard Auxiliary

By François Vézina, CCGA

The Canadian Coast Guard Auxiliary (CCGA) celebrated its 30th anniversary in 2008. Looking back, its 4,200 volunteers commemorated over 50,000 missions performed during that period, which contributed to the excellent Canadian ratio of 94% (lives saved/lives at risk) in marine SAR. Looking ahead, CCGA members could also see that the organization is facing several new challenges.

As the primary search and rescue (SAR) partner of the Canadian Coast Guard (CCG), the Auxiliary renewed its Contribution Agreement with the CCG in March 2008, for a five year period. The agreement provides funding for operations, training, insurance and administration of the CCGA across Canada where the 1,200 Auxiliary units provide SAR services that are complementary to those provided by the CCG.

The profile of the Coast Guard Auxiliary membership remains a well-balanced mix of pleasure boaters and commercial fishermen. Likewise, the Auxiliary fleet includes owner-operated vessels (pleasure crafts and fishing vessels); it also includes SAR dedicated vessels and community vessels owned by SAR rescue societies.

The following recent studies allowed the CCGA to review its management structure, needs analysis and training programs:

Governance Review Initiative (2006)

The primary objective of the governance review was to help improve the ability of each CCGA organization to work more effectively with each other and with the Canadian Coast Guard, with the ultimate goal of

maintaining and improving the delivery of SAR services to Canadians.

CCG SAR Needs Analysis (2007)

The SAR Needs Analysis studied Canada's maritime SAR system over the five-year period 2000–2004 (inclusive). It evaluated each of Canada's 39 statistical SAR areas, using the same methodology in each area. The SAR system was assessed to identify opportunities for improvement based on:

- Level of service (i.e., rate of effectiveness);
- The system's coverage capacity and capability in each statistical area; and
- Future implications of client activity trends

Training Review (2008)

The objectives of this review were to provide a national overview of ongoing training activities and programs across the five regional auxiliaries and to:

- Assess the relevance of those activities to the CCGA National Training Standards 2001;
- Identify regional trends, variances and issues affecting CCGA training standards, delivery mechanisms and administration;
- Review recommendations of past evaluations of the CCGA as it pertains to training; and
- Recommend possible course of actions to improve the training portfolio in the CCG-CCGA partnership.

In order to better train its members, the CCGA is proceeding to the deployment of several new initiatives, such as the SAR Management System, the Fast Rescue Craft Simulator and the NETsim simulator, originally developed by the Pacific region.

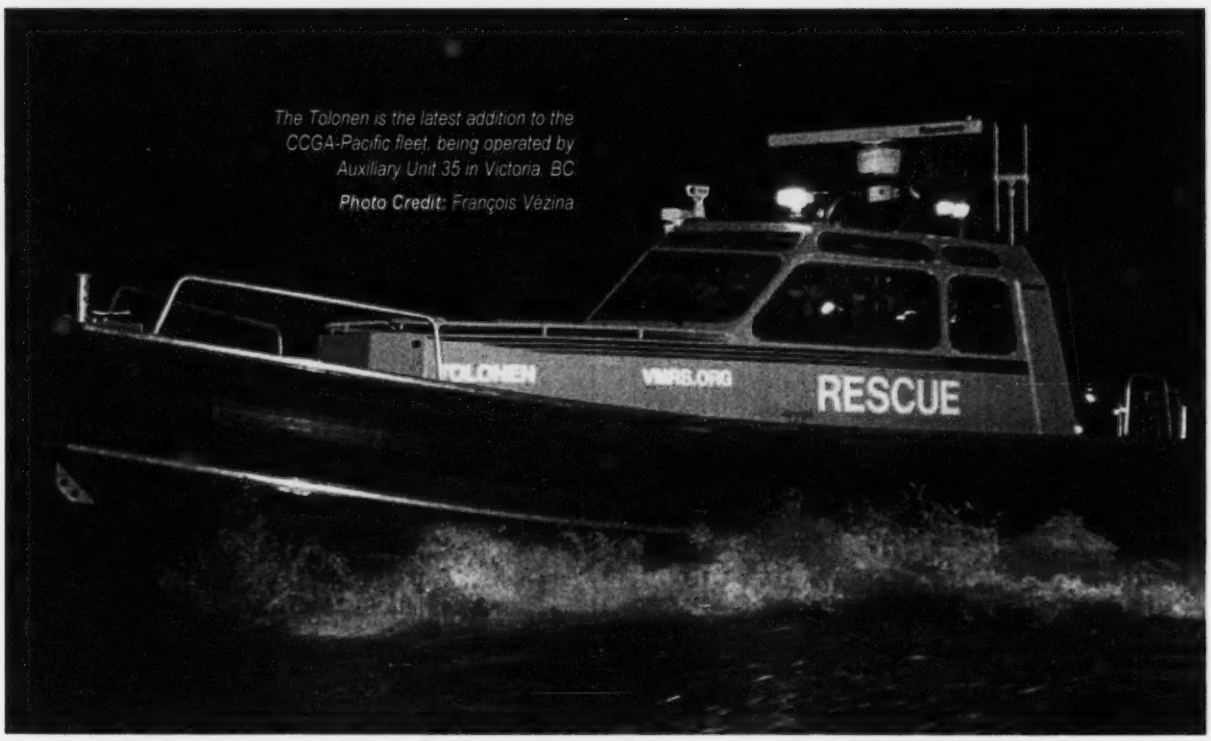
The SAR Management System (SMS) tracks all aspects of marine SAR in a unified, automated database. Reports are available at any time via the secured web interface.

The CCGA-Pacific simulator is a completely immersive fast rescue craft simulator, which includes an accurate mathematical modeling of vessel motion. It contains a mock-up of an actual fast response craft cabin, complete with real vessel controls and equipment, which makes for a truly realistic experience.

The NETsim is a virtual simulator that has the standard marine navigational equipment used on most rescue crafts. NETsim can be accessed by anyone with a computer and a high-speed Internet connection. It allows CCGA members to gain marine navigation knowledge and to practice skills in a virtual environment.

Both the Simulator and NETsim allow the Auxiliary to reduce training costs and minimize risks associated with training. However, despite all these advances in technology, the delivery of marine SAR services remains a risky venture. ■

François Vézina is the National Business Manager of the Canadian Coast Guard Auxiliary. (www.ccga-gcac.org)



The Tolonen is the latest addition to the CCGA-Pacific fleet, being operated by Auxiliary Unit 35 in Victoria, BC.

Photo Credit: François Vézina

Calling for Help:
Making an informed choice

By NSS Staff

In support of the National Search and Rescue Program, the National Search and Rescue Secretariat is pleased to provide you with this information piece, which can be used in your public education, outreach, awareness and prevention activities.

Regardless of the amount of preparation, distress situations can still occur. Having the ability to alert search and rescue (SAR) authorities as soon as possible increases your chance of a successful outcome. Carrying some sort of device to call or alert others to an emergency situation should be an essential part of your survival kit, and should be compatible with the activity and area in which you will be operating.

Advance preparation is still required, however. It is critical to know both the capabilities and the limitations of the equipment you are planning to use as your lifeline to survival. This article will provide an overview of various technologies that are typically used to call or alert SAR authorities, as well as key points to consider when making your selection. Indeed, most people find that using a combination of technologies can be the best approach.

1. 406 MHz Emergency Beacons: The International Satellite System for Search and Rescue – COSPAS-SARSAT

Since its inception in 1982, the International Satellite System for Search and Rescue, COSPAS-SARSAT (www.cospas-sarsat.org), has been linking those in distress with search and rescue responders around the world. As of December 2007, the system had provided assistance in rescuing more than 24,700 persons in over 6,760 incidents. As one of the original founding members – along with Russia, the USA, and France – Canada continues to be an active participant in the development, management, and operation of COSPAS-SARSAT.

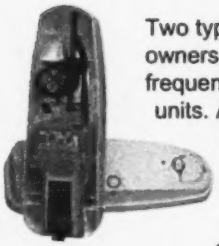
The COSPAS-SARSAT system has three key components:

- the **emergency beacons** that transmit a distress signal;
- the **satellites** that capture and calculate the location of the distress signals; and
- the **ground stations and data distribution network** that relays the distress alerts to the appropriate rescue coordination centres worldwide.

When activated, a 406 MHz emergency beacon sends a digitally encoded signal that signals a distress condition, and uniquely identifies the beacon sending the alert. The signal is captured by one or more of COSPAS-SARSAT's satellites, including those in low-earth orbit over the poles, as well as geostationary satellites that continuously monitor the earth's surface between 70°N and 70°S latitude. The signal is downloaded to specialized ground stations (Local User Terminals), which automatically process and forward the alert to one of 26 Mission Control Centres around the globe. Canada's Mission Control Centre (CMCC) is located in Trenton, Ontario. Using the satellite-derived information, a location is also calculated within 5 kilometres of the beacon's position. If the beacon is GPS-enabled, the location accuracy may be closer to 0.1 km.

Fig. 1 – How the COSPAS-SARSAT system works.

Using the emergency beacon's unique code and registered information, CMCC rapidly validates the alert and forwards it to one of the Joint Rescue Coordination Centres (JRCCs) or appropriate civil authorities for action. The JRCCs, which handle aviation and maritime incidents, are strategically located in Trenton, Ontario; Halifax, Nova Scotia; and Victoria, British Columbia. Figure 1 shows how these components of the COSPAS-SARSAT system work together.



ACR Electronics EPIRB

Aside from the initial cost to purchase a 406 MHz emergency beacon, there is no subscription fee for COSPAS-SARSAT monitoring, nor is there any fee for registering it with the Canadian Beacon Registry.

The Canadian 406 MHz Beacon Registry

The key attribute for modern COSPAS-SARSAT beacons is their ability to transmit a digitally-encoded signal on 406 MHz. When properly registered with the Canadian Beacon Registry (www.canadianbeaconregistry.forces.gc.ca), SAR authorities will also know who is in distress, in addition to their location. If the beacon is triggered accidentally, false alarms can often be resolved by making a single phone call to the owner, or his/her emergency contacts. This ensures that rescue units are available to respond to actual distress situations. 406 MHz beacon registration is therefore a critical step in getting the most out of the COSPAS-SARSAT system.

In addition to the initial registration, it is important that beacon owners update their information in the Canadian Beacon Registry on a regular basis. And, at the end of an emergency beacon's life, it is important that it be disposed with care. More information about the Canadian Beacon Registry is available at the National Search and Rescue Secretariat website (www.nss-snrs.gc.ca).

Types of 406 MHz Emergency Beacons

There are three types of COSPAS-SARSAT emergency beacons, each designed for a specific purpose. All 406 MHz emergency beacons are also equipped with a secondary homing signal on 121.5 MHz, which helps rescuers locate the beacon in conditions of darkness or reduced visibility. Many 406 MHz beacons are also capable of transmitting GPS coordinates along with the distress signal, which truly takes the "search" out of "search and rescue".

Emergency Locator Transmitters (ELTs) – Aviation Use

Emergency Locator Transmitters (ELTs) are purpose-built for aviation use. An ELT is fixed to an aircraft's structure, usually near the tail, and is automatically activated by the force of a crash. The ELT can also be manually activated, with the help of a cockpit-mounted switch required for a 406 MHz installation.

Two types of ELTs are currently available to aircraft owners: analog units, which transmit on a primary frequency of 121.5 MHz; and the digital 406 MHz units. As of February 1, 2009, analog 121.5 MHz ELTs are no longer monitored by satellite, and do not therefore provide early alerting or a satellite-derived location for an aircraft in distress. The requirements for using ELTs on aircraft are specified in the Canadian Aviation Regulations.

The Canadian Forces is responsible for responding to search and rescue incidents involving aircraft, including those incidents signalled by an ELT alert. Volunteers from the Civil Air Search and Rescue Association may also be called upon to assist.

Emergency Position-Indicating Radio Beacons (EPIRBs) – Maritime Use

Emergency Position-Indicating Radio Beacons (EPIRBs) transmitting on a primary frequency of 406 MHz are required on ships, fishing vessels and tugboats above a certain size and weight, as outlined in the *Canada Shipping Act* and associated regulations. Class 1 EPIRBs may be activated manually or automatically when they come in contact with water. They are also designed to float free from a sinking ship. Class 2 EPIRBs can only be activated manually. Vessels not required by law to carry an EPIRB (e.g. small pleasure craft) are encouraged to do so voluntarily.

The Canadian Coast Guard, assisted by the Canadian Forces, responds to maritime SAR incidents within Canada's ocean jurisdiction and in the Canadian waters of the Great Lakes and the St. Lawrence System. Volunteers of the Canadian Coast Guard Auxiliary may also be called upon to assist. Response to marine SAR incidents that occur on Canada's inland lakes and rivers is the responsibility of the local police, who may also call upon SAR volunteer teams to assist.

Personal Locator Beacons (PLBs) – For Personal Use

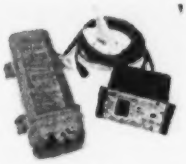
Personal Locator Beacons (PLBs) are specifically designed to be lightweight, portable, and to withstand the elements. They are triggered manually using a simple two-step process, which helps prevent accidental activations. While intended primarily for use by those working and recreating on the ground or inland waters (e.g. hiking, canoeing), pilots and mariners are also using PLBs on board aircraft and boats as personal distress alerting devices. Sometimes these PLBs are marketed as "Survival ELTs" or "Survival EPIRBs".

Police forces across Canada (e.g. Royal Canadian Mounted Police, Ontario Provincial Police, *Sûreté du Québec*, etc.) are tasked to respond to SAR incidents

triggered by PLBs that occur on the ground, or on inland lakes and rivers within their jurisdiction. Specially trained ground SAR volunteers may also be called upon to assist. Parks Canada's public safety specialists are responsible for ground SAR within national parks.

Pilots and passengers who carry PLBs on aircraft should therefore confirm that their Canadian Beacon Registry record reflects this use, to ensure that the appropriate air search and rescue response (i.e. Canadian Forces / CASARA) is coordinated.

SPOT Satellite Messenger



ELT

2. Alternative Satellite-Enabled Alerting Technologies

There are a number of other commercial satellite-based technologies now available to Canadians that include a function for signalling emergencies. Many are designed primarily for locating and/or monitoring the status of people, vessels, aircraft, or vehicles, with distress alerting provided as a secondary capability.

Most of these devices acquire and then re-broadcast their GPS position through a commercial satellite system. Many also offer the capability to send these periodic GPS location reports to a data server – essentially creating an "electronic breadcrumb trail" that can be monitored remotely through the Internet or an electronic messaging system.

In addition to the cost to purchase these devices, a subscription fee is usually charged by the system provider for access to the satellites and the related data distribution and alerting services. When an emergency alert is transmitted, the commercial service provider also assumes the responsibility for contacting the appropriate search and rescue authorities on behalf of the customer.

At the present time (June 2009), some of the satellite-based tracking and emergency alerting products sold by Canadian-based companies include:

- Guardian Mobility – *Skytrax, Seatrax, Tracer* (www.guardianmobility.com)
- Solara Remote Data Delivery – *Field Tracker 2000* (www.solaradata.com)
- SPOT (Globalstar Canada) - *SPOT Satellite Personal Tracker* (www.findmespot.com)

Consumers considering these alternative technologies for search and rescue alerting are encouraged to research the following:

- What is the extent of satellite coverage in the area where you will be using the device?
- Is the device designed for the environment in which it is going to be used most often (e.g. aviation, maritime, ground and inland waters), and to what standard(s)?
- Is it approved for use in Canada?
- What is the battery life, and what is the optimum operating temperature range?
- Does the device have to successfully receive a GPS position to determine its location, or can its location be calculated through other means?
- Does it have a secondary homing signal that search and rescue units can use to pinpoint you position (e.g. at night or in low visibility)?
- Is the satellite system itself, and message traffic, monitored continuously by the service provider? In other words, will any problems or outages with the system be promptly detected and remedied?
- Is the company's emergency dispatch centre (if applicable) well-acquainted with Canada's search and rescue system, and does it have the appropriate contact numbers for your area? If the dispatch centre is located outside your region, or outside Canada, toll-free numbers for local emergency services may not work. It may therefore be necessary to provide the company with the appropriate direct-dial emergency numbers, including area code, for your region.

3. Cellular and Satellite Telephones

Cellular telephones

Cellular telephones can provide a direct and very capable means of communicating a distress situation. They enable rapid and two-way communication with rescue authorities. In order to ensure that they perform as expected, however, there are a number of aspects to consider:

- Is there cellular coverage in the area in which you will be travelling? Check with your service provider before you go. Most publish their coverage maps online. Even in an area having good coverage, physical obstacles like steep terrain can block the signal.
- Is "911" service available? In certain regions of Canada, 911 service is not available to landline or cellular users. The appropriate direct-dial numbers for the emergency and SAR services should therefore be compiled.
- Will you be subjecting your cellular phone to environmental extremes (e.g. very hot or very cold temperatures, dust, high humidity)? Is there a risk of dropping it into water, or onto rocks? Most cellular phones are not designed for rugged outdoor use, and may not therefore be suitable as a primary emergency alerting device.

- How long do the batteries typically last, and in the temperatures you are likely to encounter?
- Is the cellular phone equipped with a global positioning system (GPS) chip, and is this function activated? This feature can transmit your location to emergency authorities. Cellular companies may also be able to determine your approximate location by the cellular towers that are receiving your signal. These features should not, however, be relied upon as the sole means of determining your location.

Satellite telephones

Satellite telephones are usually more versatile than cellular phones, since they are not limited by the availability of ground-based cellular networks. They are also particularly useful in that they permit real-time, two-way communication. However, many of the same considerations apply when evaluating the adequacy of a satellite telephone as a distress alerting device:

Satellite phone

- Is there good satellite coverage in the area in which you will be travelling? Check with your service provider before you go, as this will vary by company. Unlike cellular phones, most satellite telephones also require the user to be outside, or somewhere with a clear view of the sky.
- Since calls placed from a satellite telephone must include an area code, "911" services cannot be reached. The appropriate direct-dial numbers for emergency and SAR services must be researched for the region of travel. Also, toll-free numbers may not be compatible with some satellite telephone services. Check in advance.
- Is the model of satellite telephone designed for a rugged environment? Some handsets are more robustly constructed than others, and may be water, dust, and shock resistant.
- Battery life should also be carefully researched, and spares carried.
- What other potentially useful features does the satellite telephone have? Can it calculate or display your position, or send and receive data? Check with your service provider.

Some caveats:

As the technologies available for search and rescue alerting continue to develop and grow, so too has confusion regarding the capability and limitations of related safety devices, including those that also use the term, "beacon":

Avalanche beacons / transceivers

Avalanche beacons are critical safety devices that should be worn by people working, travelling, or recreating in avalanche-prone areas. Since survival after being buried in an avalanche is usually measured in minutes, rescue must be carried out by other people close by who were not buried. By homing in on the signal transmitted by an avalanche beacon, those who are buried can hopefully be located and dug out, before they run short of breathable air.

These beacons should not be confused, however, with 406 MHz COSPAS-SARSAT beacons like PLBs, ELTs, and EPIRBs, or any of the alternative locating devices currently on the market. Avalanche transceivers cannot be detected by COSPAS-SARSAT satellites, overflying aircraft, or even heard by the human ear. They are not designed, nor are they suitable, for distress alerting.

Family Radio Service (FRS) & General Mobile Radio Service (GMRS) radios and beacons

These popular portable radios are now used in virtually every outdoor activity, and are an easy and effective means of maintaining short-range communications within members of the same group. However, FRS and GMRS frequencies are not universally monitored by emergency services personnel. While some parks and resorts have designated certain FRS and GMRS channels for emergency purposes, the public should not have any general expectation of being able to send a distress message using these radios. They should not therefore be relied upon as an emergency communications device.

Similarly, emergency beacons that transmit on FRS or GMRS frequencies are not monitored by search and rescue authorities, unless there is specific information that a distress situation exists, and that an FRS/GMRS beacon is being used. As these FRS/GMRS beacons are very rare, few search and rescue teams are equipped or trained to locate them.

Maritime Survivor Locator Devices (MSLDs)

Maritime Survivor Locator Devices, or MSLDs, are short-range beacons most commonly used by personnel working on ships or offshore oil and gas platforms. They are compact beacons worn on a lifevest or floatation suit, and may be manually or water-activated. Transmitting a low-powered radio signal (e.g. 121.5 MHz), MSLDs are intended for short-range homing. Frequently called "man overboard" beacons, they indicate the direction towards a person who has fallen into the water, which is particularly useful during rescue operations in heavy seas or darkness. MSLDs are not, however, designed or intended to be a primary distress alerting device, nor are they required to meet the minimum standards for a COSPAS-SARSAT PLB or EPIRB. ■

The National Prevention Strategy and you

By Jacqui Bannach, NSS

In 2008, the National Search and Rescue Prevention Working Group recommended immediate and concrete steps to reduce or lessen the need for search and rescue (SAR) response. As a result, the respective SAR committees of federal and provincial/ territorial governments agreed to a National SAR Prevention Strategy. Based on the hypothesis that 80% of SAR incidents are caused by the top 20% of subjects, activities and/or locations that generate a need for a SAR response, the strategy aims to provide broad public awareness and targeted outreach to reduce the frequency and severity of SAR incidents.

This prevention strategy is based on the 2003 National SAR Program's Prevention vision and objective:

Vision

A Canada where people engaging in activities that might require a SAR response, assess the degree of risk involved in their actions and choose a behaviour that avoids or minimizes potential injury or loss of life.

Objective

Prevention aims to motivate people to acquire and use the knowledge, skills, and devices, necessary for them to avoid or reduce the severity of incidents associated with their activities, which might require a SAR response.

In order to reach this goal, the four following strategies were developed in 2004:

- Motivating people to acquire and use the knowledge, skills and equipment necessary to save lives and avoid injury;
- Strengthening the capacity of the prevention community throughout Canada;
- Designing effective SAR prevention programs, activities and measures that reflect prevention community best practices and incorporate lessons learned; and
- Committing to the achievement of measurable results.

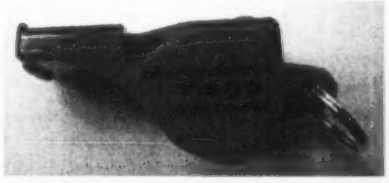
While a lot of consultation and effort went into developing a SAR prevention strategy, previous prevention initiatives did not measure baseline activities. It was therefore difficult to attribute any progress to education initiatives, as well as implement and follow through in an intensive manner. Since that time, SAR stakeholders have undertaken various activities, but only a few achieved measurable results. One of these activities is the AdventureSmart program.

...this program combined online and on-site awareness with targeted outreach.

Developed by the British Columbia Provincial Emergency Program, with the assistance of the National Search and Rescue Secretariat, the Royal Canadian Mounted Police (RCMP) and the British Columbia SAR Association, this program combined online and on-site awareness with targeted outreach. The program provides specific information and education messages to high risk groups, such as snowmobilers, hikers, etc. The outreach component utilized existing programs, such as the RCMP's *Hug a Tree and Survive* (for children age 5-11) and the *Snow Safety Education Program*, and developed other programs like *Survive Outside* to meet audience needs (older teens and adults).

The key to the success of the AdventureSmart program is:

- the dynamic interaction of credible spokespersons with the general public,
- a commitment to sustained investment,
- the delivery of consistent messaging throughout the program, and
- quality assurance and evaluation.



An AdventureSmart whistle, used in the Hug-a-Tree and Survive program.

Photo Credit: *AdventureSmart*

The AdventureSmart program is kept up to date and relevant to its audiences because it assesses SAR incidents and targets areas with the greatest need, integrating feedback and lessons learned into the delivery of the program.

The National Prevention Strategy will build on the success of AdventureSmart by rolling out this program nationally as a core element of the National Prevention Strategy. Maximizing the skills and experience of SAR volunteers will make AdventureSmart programs accessible in communities across Canada and reduce the severity and frequency of SAR incidents. ■

Jacqueline Bannach (Jacqui) is a Senior Analyst with the National Search and Rescue Secretariat. Her first exposure to SAR over 20 years ago was as a young lieutenant in the Cadet Instructors Cadre, teaching aircrew survival to cadets at summer camp in Whitehorse, Yukon. Initially a military police officer, she joined the RCMP as a policy analyst for search and rescue and general duty policing. In November 2007, Jacqui joined the National Search and Rescue Secretariat on secondment, and later as a permanent employee, with a focus on revitalizing SAR prevention.

In support of the National Search and Rescue Program, the National Search and Rescue Secretariat is pleased to provide you with the following four information articles, which can be used in your public education, outreach and prevention activities.

Outdoor prevention: the importance of hydration

By Kim Fauteux, NSS

Many people throughout Canada enjoy hiking and backpacking, and our country surely provides the green spaces to be able to do so. Outdoors enthusiasts usually ensure they have all the necessary items to be able to survive out on the trail or on the mountain. Nevertheless, some of them overlook what should be the number one item on the list: enough water per person to stay hydrated for the entire trip.

We need to ensure that our body will continue to function properly by keeping it hydrated, especially when in motion. Since 60 to 70% of our body mass is water, and water is also a main component of blood, it's critical to replace the water we lose through bodily functions like sweat, and urine. Without enough water in our system, we are at serious risk of experiencing various unpleasant and sometimes life-threatening symptoms and conditions, such as heat exhaustion, muscle cramps, confusion and heat strokes.

Fill that water container

Most backpacks have a pouch made expressly for keeping water containers handy. Make sure that you fill that container before heading out, and that you take the opportunity to refill it anytime you can. Most people who get lost or face unexpected bad weather do not plan to be gone for an extended period of time. Sadly as we often read in the news, this happens on a regular basis, and water may not always be available nearby.

Since not all water is safe to drink, and finding a harmless supply of outdoor water isn't easy, keeping our body hydrated on a trip can be a challenge. Pond or lake water often contains micro-organisms that can make you sick, and in some cases, may even lead to death. To make outdoor water suitable to drink, make sure you purchase iodine tablets and drop them in your water container. After 30 minutes, the iodine tablet will have done its magic, and the water will be safe to drink.

Drink often

We must remember that being hydrated is as important in cooler weather, as it is in warmer weather. Drinking every 15 minutes is a good way to ensure that our body will not get dehydrated. Don't wait until you are thirsty to drink. Although thirst doesn't always indicate a problem, it is one of the first signs of dehydration.

Keeping our body well hydrated when hiking or backpacking will ensure a more pleasant excursion and help prevent injuries. So make sure you pack an adequate water supply before heading out the door; it could very well make the difference between a fun time, or a miserable and painful experience. ■

Kim Fauteux is a Communications Officer at the National Search and Rescue Secretariat, and is also the editor of SARSCENE magazine.

If you drink, don't drive!

By Canadian Safe Boating Council

When the Canadian Safe Boating Council speaks to Canadian boaters each year about the dangers of drinking and boating, there is no gentle way to do it.

The motto on the road is "if you drink, don't drive". It's the same on the water. And so are the laws. First and foremost, a boat is a vessel in the same way a car is a vehicle under the Highway Traffic Acts in all provinces and territories in this country. If you are convicted in Canada of driving a vehicle under the influence, you lose your licence. In many parts of Canada, the same thing applies if you are under the influence in a boat. And you might lose your car driver's license too.

Canadian studies show that, in nearly 40% of boating deaths, alcohol was detected or suspected and 23% of victims were above the legal limit. The effects of sunshine and a boat's rocking motion increase the effects of alcohol, and for a boater, a simple ride can turn into a dangerous dunking. A big wave, a quick change in the boat's direction, or a 'tippy canoe' can result in someone in the water.

Psychologists know that human nature has a way of rationalizing. "It can't possibly happen to me" is often the thought. Whether that means "I'll never be caught" or "I'll never be killed" doesn't matter. Neither of those things will happen if boaters stick to just boating on the water. Afterward, you can have a few drinks on shore and then stay put.

It's that simple - If you drink, don't drive. ■

Chilling facts of COLD WATER

By Canadian Safe Boating Council

Hypothermia. Say it out loud and it's an unpleasant sounding word.

But it has a simple meaning. It's when the core of your body drops to abnormally low body temperatures and if it goes too low and for too long eventually your heart can stop.

Many Canadian boaters are aware of hypothermia but most are not aware that it is the 'final stage' your body reaches after being in cold water. Many people die during the first few minutes of immersion in cold water and they are not hypothermic, they simply drown due to the immediate, involuntary and often deadly effects of cold water.

If you accidentally tumble into cold water, the initial cold shock will make you gasp and if you are underwater you can breathe in about a litre of water. If you are on the surface, your heart rate can skyrocket, your breathing will be uncontrolled and increase as much 600 to 1000 percent. You can expect panic to set in as well. For most, this initial shock will last about a minute and then the breathing will slowly come back under control.

Depending on the water temperature, over the next ten minutes or so you will experience Cold Incapacitation. As your body struggles to preserve its core temperature your limbs will become numb and your ability to self rescue or even simply continue to swim will become impaired. In cold water without a lifejacket, you will eventually become so incapacitated that you can no longer stay afloat.

If you do have a lifejacket on and have not been able to rescue yourself, even in the coldest water, you can expect to be conscious for about an hour and it will still be some time before you succumb to hypothermia. This will give rescuers plenty of additional time to find and rescue you.

There is one simple preventative measure that anyone can take to avoid drowning in cold water and to keep you floating if you become hypothermic. Wear your lifejacket. It guarantees that you will float, especially in those first critical minutes when you are just trying to catch your breath and figure out how to rescue yourself. ■

THE OPERATOR CARD IS GOOD FOR LIFE

By Canadian Safe Boating Council

How do I get a card?

Boaters can obtain their card after receiving a mark of at least 75% on a Transport Canada accredited test. Boaters have the option of taking this test without first completing a course. Accredited tests are offered by Transport Canada accredited course providers.

How do I find an accredited course provider near me?

The Transport Canada Office of Boating Safety provides an up to date listing of accredited course providers on their Web site.

Why take a boating safety course?

- To improve the safety of all boaters and the boating environment.
- To get your Pleasure Craft Operator Card as required by the regulation.
- To learn about your responsibility.
- To make your boating experience enjoyable for everyone.

What is covered during a course?

The course covers a full range of basic boating information, such as:

- minimum safety equipment requirements required on your boat;
- the Canadian Buoy system;
- how to share waterways;
- a review of all pertinent regulations; and
- how to respond in an emergency situation.

What are my options?

- Take the course in class, by correspondence or through the Internet.
- Purchase a training manual from an accredited training organization, study on your own and then take the test.
- If you already know the rules, you may wish to challenge the test although Transport Canada highly recommends taking an accredited course. ■

Manitoba SAREX 2009
Operation Remote Response

By Dave Schafer, Manitoba Office of the Fire Commissioner

During the week of February 9, 2009, the Manitoba Office of the Fire Commissioner hosted the largest provincial emergency exercise held to date in Manitoba. The two-day exercise involved multiple agencies, including the police, EMS, search and rescue volunteers and other resources and provincial agencies from across Manitoba and Ontario. Over 150 members of the various response agencies participated in this event.

The exercise location was a remote site approximately 15 km north-east of the small northern community of Waterhen, MB. The scenario involved a light airplane crash into a remote camp that set off a chain of events requiring the response of multiple agencies, including the various specialty response teams within each agency. The primary objective of the exercise was to promote interagency cooperation and communications under a single Incident Command System model and common set of incident objectives.

The following agencies participated in this year's winter exercise:

- Manitoba Office of the Fire Commissioner
- Manitoba Emergency Measures Organization
- Waterhen Community Council
- RCMP D – Division - Emergency Response Teams
- Civil Air Search and Rescue (C.A.S.A.R.A.)
- Search and Rescue – Manitoba (S.A.R.M.A.N.) Volunteer GSAR Network
- CAN TF – 4 Manitoba USAR Team
- CAN TF – 3 Toronto USAR Team
- Parkland Regional Health Authority – EMS
- Manitoba Hydro

The exercise scenario tested the province's ability to respond to a major incident in a remote area, including the ability to treat and transport multiple casualties from a remote location. Numerous incidents that engaged the various RCMP D–Division – Emergency Response Teams were imbedded into the exercise scenario. The remoteness of the incident presented new challenges to the responders requiring interagency cooperation and effective communications.

The Waterhen Community Council members were strong supporters and active participants in this exercise. The community hosted many of the exercise observers and facilitators, engaged their local responders in the incident, and ultimately tested the community's emergency response plan.

Manitoba SAREX 2009 was supported in part by the National Search and Rescue Secretariat's New Initiatives Fund, to promote inter-agency cooperation and training through provincial exercises. Volunteer responders from the S.A.R.M.A.N. Volunteer GSAR network and other response teams benefited from this valuable opportunity. A big thank you goes out once again to the National Search and Rescue Secretariat for this valuable support. ■

The incident crash site.

Photo Credit: *Office of the Fire Commissioner*

Dave Schafer is the Manager of Operations – West for the Manitoba Office of the Fire Commissioner. The Office of the Fire Commissioner oversees the Ground and Urban Search & Rescue Networks in Manitoba and is a founding partner in the Search and Rescue - Manitoba "S.A.R.M.A.N" Association.

Vertical SPIN

The effects of vibration and posture on rotary-wing aircrew

By Emily Roback, B.Sc., D.C.

Low back pain (LBP) is one of the most important health issues noticed among rotary-wing aircrew members at Mustang Helicopters Ltd. in Red Deer, Alberta. This health issue also affects many air search and rescue members throughout Canada. The flight sitting posture and vibrations produced by the aircraft are identified as high risk factors for LBP.

The primary causes of LBP include steady mechanical vibrations, poor posture, lack of abdominal stability, loss of flexibility and poor health/ fitness levels. With this in mind, an aviator experiencing LBP while controlling an aircraft compromises flying safety. Until recently, there had been an increase in the number of pilots, navigators, and spotters reporting difficulties concentrating during flights, as well as achieving low back and leg comfort while airborne in a helicopter.

According to Nigel Day, Safety Officer at Mustang Helicopters Ltd, the incidence of lower back and right-sided sciatic pain in helicopter pilots is attributed to the steady horizontal and vertical vibrations and the in-flight pilot's posture[1]. Helicopter vibration has a peak power at frequencies around 5 Hz, which is within the range that the human upper body presents resonance frequency[2]. This means that not only the pilot may experience low back pain, but also the navigator and spotters as well.

Furthermore, there are several contact points between the aircrew and the aircraft, hands, feet, low back and pelvis regions. The lumbopelvic (low back and pelvis) region accepts all horizontal and vertical forces. The horizontal forces are shear and vertical are compression. With this in mind, low back and pelvis are under maximal muscle strain and minimal joint support due to the vibrations produced by the aircraft.

Asymmetrical Posture

Awkward posture is also connected with the presence of LBP and sciatica. In the Eurocopter Astar, one of the most innovative helicopters at the Red Deer Regional Airport, the pilot must bend the trunk forward and towards the left to operate the controls. This appears to be the main in-flight seating posture for most helicopter pilots. As a spotter, one must bend the trunk to the side towards the nearest window to do a ground search. This asymmetrical posture during prolonged flights tends to lead to muscle fatigue which often leads to pain. An average flight lasts between four and six hours with three or four landings to refuel.

The workstation of a pilot, navigator, and spotter is quite similar to that of an office worker. The special relationship of the extremities (arms and legs) with the abdominals is defined as core stability. The more stable the spine is, the easier it is to move the arms and legs effortlessly.

The ideal positioning of the core involves aligning the arms and legs with the spine where minimal mechanical stress is applied to the soft tissues (i.e. muscles, ligaments, tendons, capsule, etc), bones, and joints. Incorrect alignment produces additional mechanical demands on the supporting structures and creates wear and tear in the joints. Improper positioning of the pelvis also creates excessive anterior tilt (top of the pelvis rotates forward), which is common among individuals during prolonged sitting in aircrafts.

Importance of Stretching

Prolonged unsupported sitting may also result in loss in flexibility in the hip joint and supporting muscle groups. The post-flight stretching routine must consist of exercises that focus on five important muscle groups, namely, the hip flexors (iliopsoas and rectus femoris), hip lateral rotators (piriformis), hip adductors (iliotibial band and tensor fasciae latae), hip extensors (hamstrings, gluteals, and calves) and upper chest (pectoralis major/ minor). More often than not, individuals that do not stretch find themselves constantly shifting their body in their seat to minimize low back and leg discomfort.

For a typical rotary-wing crew member, practicing good health/ fitness habits are not considered a priority unless there is a decrease in the quality of life and effectiveness of the searches. An increase in bodyweight, decrease in energy levels, and increase in joint wear and tear encourages the member to take more time off work and spend time at the doctor's office. Flying a helicopter predisposes flight operators to low-back pain and degenerative joint disease[3].

Specific stretches for the lower body are important, but it is also primordial to progress to higher levels of exercise that include stability, muscle endurance/ strength, power/agility, balance and coordination. By improving power, agility, balance and coordination, pilots have better eye/hand speed and coordination. An increase in muscle mass, vitamins/minerals, healthy food/beverage intake, and bone density leads to higher metabolism and lower body fat percentages. As a result, the crew can handle the aircraft effortlessly and maintain good health/fitness levels.

Foresight is better than hindsight

Prevention is the best method for the management of LBP induced by steady mechanical vibrations, poor posture, lack of abdominal stability, loss of flexibility and poor health/ fitness levels. It is recommended to utilize cushions that dampen the effects of vibrations that occur in a single flight. Each time there is an opportunity to land the aircraft, do an extra set of stretches to lengthen the back muscles.

While sitting for long periods, practice tilting the top part of the pelvis backwards and tightening up the abdominals for two minutes every twenty minutes. By practicing good exercise techniques and eating habits daily, the overall quality of life and the effectiveness of the searches will automatically improve. There will be a reduction in the number of days taken off work, increase readiness, decrease wear and tear of the body, and decrease in health care and veterans affairs costs.

Emily Roback is a chiropractor with Chiroback Trekker, practicing in Aviation Chiropractic. Her aviation patients have inspired her to pursue a mountain ski guide certificate and private pilot license to work in the heliski industry. Dr. Emily Roback can be contacted at roback@doctor.com or 403-886-2044.

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